

SITE RESPONSE SENSITIVITY ASSESSMENT COMPLETED FOR THE PANTEX PROBABILISTIC SEISMIC HAZARD ANALYSIS CONCEPTUAL PLAN

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Abstract

The Pantex Plant is carrying out a step-by-step process to evaluate its probabilistic seismic hazard analysis (PSHA) in light of new information that has become available since the PSHA was updated in 1998 (Lawrence Livermore National Laboratory [LLNL], 1998). A site response sensitivity assessment (SRSA) was completed to assist in defining field and laboratory site characterization investigations in support of the future Pantex PSHA. The SRSA helps define which of the technical inputs for performing the site response analysis (SRA) are most critical to accurately defining the Pantex site amplification factors, including uncertainties. The SRSA was completed following the methodology outlined in the EPRI Technical Report *Seismic Evaluation Guidance: Screening, Prioritization and Implementation Details (SPID) for the Resolution of Fukushima Near-Term Task Force Recommended 2.1: Seismic*, in which a logic-tree approach is used to quantify epistemic uncertainties in site response inputs. The SRSA input model will be described including the site shear-wave velocity profiles, the shear modulus and damping versus shear strain models, and the assessment of profile damping or kappa. The approach to assessing both epistemic uncertainties and aleatory variability will be summarized. Experience in implementing the SRSA methodology found that under certain input assumptions, resulting site amplification factors (or surface hazard curves) are lowered for cases with greater epistemic uncertainty relative to those with less uncertainty. Thus, the SRSA provided the opportunity to test the SRSA methodology to determine if this condition may exist at the Pantex Site. A summary of the SRSA results will be provided and given these results, significant issues and insights regarding performing additional SRA site investigations are described, followed by conclusions from this work.